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July 27, 1972

To the Graduate Council:

I am submitting herewith a dissertation written by Robert Wolfe Solomon, entitled "Peers as Behavior Modifiers for Problem Classmates." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Educational Psychology and Guidance.

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PEERS AS BEHAVIOR MODIFIERS FOR PROBLEM CLASSMATES

A Dissertation

Presented to

the Graduate Council of

The University of Tennessee

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

by

Robert Wolfe Solomon

August 1972

ACKNOWLEDGEMENTS

The author wishes to acknowledge that Aaron Botbyl was the originator of the peers-as-therapist question.

For their editorial contributions during the early stages of this dissertation, the author is grateful to Van and July Sutphin. Margaret Peterson typed very late and complained very little. The Mortons provided more than a home away from home; G. B. cared when it counted.

The author is appreciative of his committee for their encouragement. Dr. J. Albert Wiberley smoothed out many of the rough spots and lent considerable editorial skill. Dr. Robert Wahler, the author's chairman, was unstinting of his time and suggestions. For his personal warmth, his professional concerns and integrity, and his ongoing lessons in how really human(e) behaviorists ought to be, the author is deeply indebted.

ABSTRACT

Peer and teacher interactions with five "disruptive" children were studied within an elementary school classroom. The intent of the study was to analyze experimentally peer reinforcement control of the disruptive children's problem behaviors. Social attention provided by all peers was found to be directed exclusively to the problem behaviors during baseline. Following baseline, several manipulations of selected peer social attention contingencies demonstrated the reinforcement function of the stimulus class, and supported the hypothesis of behavior maintenance from related environmental events.

Children were taught to provide differential social attention to the reduction of classroom problem behaviors. Striking decrements in both the mean level of problem behaviors and the individual level of problem behaviors were demonstrated.

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PROBLEM STATEMENT AND LITERATURE REVIEW

Statement of the Problem

In all public school situations, the teacher has two major role responsibilities; she is in charge of the academic climate of classroom learning and the social climate of classroom behavior. The teacher time required to handle disruptive, socially inappropriate behaviors often hampers the teaching process to the extent that overall academic progress becomes pitifully slow. Disruptive or inappropriate student behavior may hamper educational progress.

"The role of education in the development of today's youth is receiving increased attention and criticism . . . the academic and social experiences during a child's twelve years in school are vital in determining the kind of life a child will or can have when he leaves school." (O'Leary and O'Leary, 1972, p. 2) Behavior problems exhibited in the classroom situation are an important facet of these academic and social experiences.

Recently, the problems attendant to and resulting from deviant classroom behavior have received greater attention. Robins, in a book titled Deviant Children Grown Up (1966) cites evidence that children evidencing symptoms formerly considered most indicative of mental problems (shyness, social withdrawal, nervousness, and so forth) seem to "get well" spontaneously or at least, not become "problem adults." In view of these data, Robins encourages educators and others

concerned with the helping professions to view children who exhibit behaviors such as hitting other children, fighting constantly and disregarding rules, as the principal targets for interventions. Increasingly, educators have come to realize that children who manifest socially deviant behavior must be dealt with in a constructive, concrete manner.

During the educational processes, classroom behavior should be directed as positively and efficiently as possible, using as little teacher time as practical. Additionally, the methods employed should be self-sustaining to the fullest possible extent.

Proposed Solution

Peer influences are a potent social force. Evidence will be cited to indicate that peer influence has been correlationaly related to the maintenance of deviant behavior produced by members of the peer group. Further, evidence will be cited demonstrating the probable efficacy of shifting such maintenance factors to the support of desirable behavior.

This study will utilize the above two elements: the influence of peers on behavior, and the systematic application of this influence in the free-field setting of the classroom. An experimental examination will be provided of the effectiveness of elementary school children (peers) as behavior modifiers to reduce the incidence of disruptive and/or inappropriate classroom behavior and to increase the frequency of desirable behaviors. The study will also experimentally examine the role of the peer group in the maintenance of disruptive/inappropriate

behaviors. Finally, the reinforcement power of the teacher will be compared to that of the peer group.

Early Research

Scientific interest in the relationships within children's peer groups developed as a natural outgrowth of the recognition that social groups can affect individual behavior patterns. Much of the early work was purely theoretical in nature, but it clearly indicated that significant aspects of individual behavior was directly traceable to group experiences (Hartup, 1969).

Tripplett's investigation (1897) though limited to the simple manipulative task of winding fishing reels, clearly established that individual children working in groups performed better than children working alone. This early work is credited with being the first study of peer groups. A respected, though often debated, text published twelve years later further emphasized the salient role of children's peer groups as a medium for the gratification of needs and the formation of social norms (Cooley, 1909).

Laboratory Settings

These early works and others thereafter were primarily laboratory studies. Laboratory studies have been important because psychological science began in laboratories, with specially designed and created environments for the subjects of these laboratory experiments. The experimenter himself furnished the conditions to fit his designs, and recorded effects of these imposed conditions as his data. This form of research is optimal when the goal is to try to control, describe,

and predict human behavior in a laboratory setting. Laboratory research will tell us how individuals might behave in certain ways if certain a priori conditions are met. If, on the other hand, the purpose of these laboratory experiments is to tell us what we may expect the behavior of individuals to be like in non-laboratory, free-field situations, they leave much to be desired. As Wright (1967) notes, less than 10 percent of all the 1400+ empirical studies reported in the child development literature prior to 1960 were observational in design and method. Further, only a distinct minority of these 10 percent were "ecological" (defined as revealing and recording the behavior of the individual in his naturally given habitat) in intent. This is not to denigrate the importance of the controlled laboratory research, but to call attention to the

. . . unfilled need for research to describe what persons do and have done in these [free-field] situations. . . . Laws of rivers and whirlwinds can be investigated in laboratories, but it is necessary to go to natural settings to learn how and how much to allow for important complications in these uniformities; it would seem reasonable to assume that a like necessity must hold indeed for the vastly more complex phenomena of human behavior. (Wright, 1967, p. 4)

Early Research in Naturalistic, Free-Field Settings

Sociometry and the work of Kurt Lewin are representative of attempts to observe and record behavior in its naturalistic setting.

Sociometry (Moreno, 1934) was one of the first research techniques to use ecological methods as its scope and intent. Sociometry employs subjective data, but provides a versatile, powerful method for the study of interpersonal attractions, group cohesiveness, and variations in the functioning of peer groups. To briefly paraphrase

Moreno's original description: Sociometry is the process of measuring, identifying, and analyzing interpersonal relationships. The results are situational and products of the moment. Disclosure, creativity and spontaneity are present in the process.

Sociometry tapped a new area for data-gathering in the naturalistic environment. Sociometry is mentioned here for that reason, and because sociometric techniques and results were used in the study.

Kurt Lewin's work combined laboratory research and techniques designed to observe, and later, change events in their naturalistic settings. Lewin's earlier studies were laboratory based, and experimental, in that consequences of various leadership styles were measured. This research was important in that it contributed improved understanding of the operation of social forces within peer groups, and gave insight to the contributions of the individual members of the peer group. Lewin then became interested in the measuring and changing of consumer buying habits (1938). These attempts were some of the first to sample and change opinions and resultant decisions in the laboratory and the naturalistic, free-field setting.

Laboratory Research vs. Research in Naturalistic Settings

Barker and Wright were students of Kurt Lewin. Their ecological explorations of Midwest (Barker and Wright, 1955) were among earlier approaches to controlled methods of observation and recording of free-field behaviors and their environmental settings.

In a later work (1965), Barker notes the experience of one of his own students who was studying frustration in children's peer groups.

In a non-laboratory replication of previous laboratory studies, the results proved very different than the previous work had led the experimenter to expect (Fawl, 1963). Fawl found that non-experimentally induced frustration was rarer in the lives of children than he had expected, and when frustrations did occur they did not have the same behavioral consequences that they did in the laboratory.

It appears that earlier experiments simulated frustration very well as we defined and prescribed it for our subjects (in accordance with our theories), but the experiments did not simulate frustration as life prescribes it for children. (Barker, op. cit., p. 5)

It seems almost paradoxical that psychology, the study of individuals, seemed to fail to see for too long of a period of time that behavior and the environment are mutually, causally related systems which interact to form a product of these interactions. Stated another way, maintenance and extinction of behaviors are related to the environmental consequences of the behaviors. (Barker and Wright, loc. cit.)

Tharp and Wetzel (1969) point out that research in the behavioral sciences ought to, ideally, form a logical progression from one end of the continuum (of discovering laboratory principles and control of these principles) to the other end (to more and more complex situations dealing with "real life"). As they also point out, however,

No such orderly progression is taking place. Work has not proceeded along the continuum, but rather attempts to study human behavior have emerged rather simultaneously at all points. (p. 11)

Behavior Modification Techniques

The efficacy of behavior modification techniques has been documented by Bandura (1969), Altman and Linton (1971), and others.

Altman and Linton make a distinction between categories of behavior modification research, based on the setting of the research. They describe the laboratory researcher as an "operant conditioner," and the applied researchers as a "behavioral engineer." Both are familiar with the principles and the theory of behavior modification, but the distinction is germane to this study.

. . . the behavioral engineer has left the laboratory in order to make systematic applications of the principles of operant conditioning to problem behaviors as determined by society. This change in direction has been accompanied by a new research strategy, i.e., the applied analysis of behavior and a new body of knowledge. (p. 277)

Bear, Wolf, and Risley (1968) state that free-field research is constrained to look at variables which can be effective in improving the behavior under study.

All behavior modification techniques make the assumption that maintenance (either direct or indirect) of the behaviors in question is at least partially a consequence of the environment in which they occur. (Wahler, 1972)

The first steps in the application of free-field behavior modification techniques were the training of parents and teachers to reduce the incidence of deviant behavior. Also, a number of investigators have worked being the techniques of behavior modification into the free-field setting of the home. Hawkins, Peterson, Schweid, and Bijou (1966) found that parents, when faced with the problem of deviant behavior by a child, can achieve marked results by the simple expedient of shifting social-attention contingencies. Wahler, Winkel, Peterson, and Morrison (1965) and Zeilberger, Sampen, and Sloane (1966) successfully

trained mothers as effective behavior therapists for their children. One of the stated purposes of the Wahler, et al. (1965) study was to analyze experimentally the related behaviors of the mother-child dyad to identify the variables which may have been functioning to maintain the deviant child behaviors. Maintenance behaviors were delineated and brought under reinforcement control of the mothers. Patterson, Ray, and Shaw (1969) demonstrated that parents frequently appear to support deviant child behavior through inadvertent misapplication of valid reinforcement techniques. This variety of investigations supports the conclusion that effective behavior modification can be accomplished in the free-field setting of the home using relatively unskilled therapists, and that socially deviant behaviors can be managed with contingent reinforcement.

Schools are another important free-field setting where behavior modification techniques have had wide application. Much of the initial work of applying behavior modification procedures to school situations was conducted in institutional or special-class settings. Birnbrauer and Lawler (1964) worked successfully with retarded subjects. Zimmerman and Zimmerman (1962) applied behavior management techniques in classrooms for emotionally disturbed children. These studies and others indicate that behavior modification techniques have been utilized effectively in naturalistic school settings.

Behavior modification techniques have also been applied in conventional classrooms. Again, results have been dramatic. Becker, Madsen, Arnold, and Thomas (1967) found that appropriate teacher social attention and praise reduced disruptive behavior. Thomas,

Becker, and Armstrong (1968) systematically varied teacher attention and found that approving teacher responses became highly reinforcing and maintained appropriate classroom behaviors, while withdrawing the positive reinforcers produced an increase in disruptive behaviors. Madsen, Becker, and Thomas (1968) surmised that showing approval for appropriate behaviors is probably the key to effective classroom management.

It is important to note that in all of these studies, the assumption is made that certain specific environmental stimulus events were seen as (causally) related to the production or elimination of certain behaviors. Wahler (1972) describes this as "a maintenance assumption that leads logically to behavior modification."

Peer Influence

There has been some research relevant to use of peers in reinforcement theory paradigms, but most of the studies were conducted in contrived rather than free-field settings. Also, almost all of this research has been observational or correlational in nature, which tends to limit interpretation of the findings. However, these studies do indicate that the child's peer group operates in a similar manner as an adult group by dispensing social attention in various forms in reply to specific behaviors of its members. Wright (op. cit.) concluded that peers constitute the most common and reinforcing source of social interactions after the age of eight.

Hartup (1964) demonstrated that peers can be very effective as dispensers of social attention. Patterson and Anderson (1964) showed

that social approval dispensed by peers can regulate the behavior of children. Buehler, Patterson, and Furniss (1966) found that delinquent girls received reliable peer approval for anti-social responses, but none for pro-social responses. Furthermore, correlational evidence was provided for adult interactions as well as peer group interaction; this evidence pointed to peer group interactions as having more influence than adult interactions in the maintenance and control of behavior. Patterson, Littman, and Bricker (1968) found that aggressive responses in pre-school age children are more likely to continue if certain kinds of peer attention follow the aggression, but not other kinds of attention. Patterson and Brodsky (1966) attempted to increase social interactions between a child and members of his peer group. The interactions of the deviant child and his peers did increase, but there were no experimental steps provided to indicate causality more clearly. Also, no information relevant to the role of peers in the maintenance of the child's deviant behavior was presented.

Surratt, Ulrich, and Hawkins (1969) successfully trained a fifth-grader to function as a "behavioral engineer" for a first-grade setting. Wahler (1967) demonstrated that the behavior of pre-school children in a free-field setting is subject to the reinforcement control of peers, and that peer social attention can provide positive reinforcement for appropriate social behavior. In a study directed to the problem of improving classroom attention, the results obtained by Packard (1970) suggested that the peers began to exercise a considerable measure of social control even though the teacher had been trained as the primary therapist.

Summary

The studies reviewed provide support for the concept that the overall peer group is an important force in maintaining the deviant behavior of its members. The data furnished clearly illustrates that children can be trained to manipulate contingencies and therefore modify behavior. Yet further, the data implies that school-age children can be taught to become effective dispensers of social reinforcement for the purpose of teaching appropriate behavior patterns. Maintenance of deviant behavior by the peer group, however, is an assumption that needs to be experimentally clarified.

It seems only appropriate that behavior modification techniques, which are based on the principles of learning, be used by those most invested in the learning process. (Whitman and Whitman, 1971, p. 185).

DESIGN/METHODS

Introduction

This study investigated the effectiveness of elementary school peers as classroom behavior modifiers. The study also provided data to assess the role of peers in the reinforcement and maintenance of disruptive classroom behavior.

Experimental Setting

An elementary school in Knox County, Tennessee, accessible to The University of Tennessee, at Knoxville, was chosen as the site for this experiment. The principal of the school had received urgent requests for assistance from one of the sixth-grade teachers. The teacher's classroom seemed to be populated with an unreachable nucleus of children who exhibited classroom behaviors disruptive to the instructional process. Both the principal and the teacher agreed to participate in the experiment.

For the purposes of this study, the disruptive children were designated as "targets." "Target" children were selected after classroom observation and consultation with the teacher. The teacher and observers readily agreed that five specific children were identifiable as exhibiting marked behavior problems in the classroom. The counterpart of the target children who were to act as behavior modifiers were designated as "controls." Recognizing that ". . . more popular children are more effective as dispensers of social reinforcement,"

(Hartup, 1969), "control" children were chosen on the basis of the results of a sociometric device and consultations with the teacher.

Sociometric choices were tabulated for the entire class. Two of the children who were chosen most often on the sociometric questionnaire, thus presumably more popular, also had been selected as "target" children. Two other "control" children, also reasonably high in sociometric status, were chosen with the help of the teacher who selected children she thought would be suitable partners for the "target" children. These choices were made at the beginning of Baseline I.

The question used for the sociometric device was "Which three children would you invite to a party? Make sure you don't invite just girls or just boys to your party." E verbalized inviting both girls and boys to insure that children of both sexes would be included in the sociometric choices.

Observers and Apparatus

The observers employed in this study were graduate and undergraduate psychology students familiar with the techniques of observing and recording behavior in naturalistic settings. The observers worked in pairs throughout Baseline I. All of the other experimental steps employed single observers with regular, weekly, reliability checks. A brief orientation session was held for the observers at the beginning of Baseline I, and weekly reliability sessions were held thereafter.

The basic recording apparatus was a modified Hawkins-type checklist (see Behavior/Stimulus Classifications below). A simplified

scoring sheet was used by the "control" children (see "Target" Behavior Modification I). Videotapes and videotape equipment were used throughout the experiment. The videotape provided lucid, permanent records of the interactions of the "control" and "target" children. The videotape was used for training observers, for demonstrations with the "control" children, and finally, for viewing by the entire class.

Stimulus Setting

The part of the teaching day usually devoted to social studies was chosen to conduct the observation sessions. The sessions began at approximately the same time each day in order to minimize time setting variables. The social studies period was deemed to present the greatest likelihood of interactions, since the teacher often assigned individual and group seat work, and had discussions, rather than formally lecturing the class. This particular arrangement encouraged personal responsibility for lessons; however, it was also subject to widespread abuse by the students, who produced more disruptive behaviors during this period than any other. The teacher did have rules for this time period; but they were not posted and were subjective. In general, no student was ever supposed to bother another student, move around the room during discussions, talk in a loud voice at any time, or engage in attention-getting behaviors. These rules formed the basis for observer decisions about behaviors in and out of the appropriate classroom context. The teacher insisted upon retention of this format; she felt that benefits outweighed the disruptions. Since some talking, discussion, and movement were

permitted and even encouraged during this time period, behaviors were scored based upon the context in which they occurred rather than a rigidly determined criterion of appropriateness. This allowed for marked flexibility for the observers since, for example, an Out of Seat (OS) behavior could very logically occur in an appropriate social context. Reliability was readily achieved using this contextual system. The observers working in pairs obtained a minimum reliability criterion of 85 percent agreement about the classification of observed behaviors. Reliabilities often exceeded the minimum criterion.

Behavior/Stimulus Classifications

Several narrative records with two observers present were discussed prior to firm decisions about categories. These finally-derived categories and their subscripts were the results of consultation with E and the observers. Categories were composed of behavioral events that encompassed the most common instances of problem behavior and desirable behavior. Categories and corresponding symbols chosen for the modified Hawkins-type checklist are as follows: Work (W), Talking (T), Attention (A), Movement in Seat (MS), Out of Seat (OS), and Object Play (OP). Depending on the context in which it occurred, each category was scored as either Problem (P) or Desirable (D).

Since each observed behavior could be scored as either P or D, some examples will serve to clarify the coding system:

Category	Examples of Specific Behavior	P or D
Work (<u>W</u>)	Working on spelling during group discussion	P
Talking (<u>T</u>)	Talking with classmates during group discussion	D
Attention (<u>A</u>)	Staring at an empty desk in group discussion	P

To reiterate, this contextual system is not cumbersome or highly complex, yet it allows for greater fidelity of individual decisions relevant to the observed behavior.

In addition to the designation of each category as P or D, coding subscripts were provided to indicate possible reinforcing agents for the observed behavior. These subscripts represent stimulus categories and each stimulus could be dispensed by peers (P), "controls" (C) or the teacher (T).

The observation session lasted between 30 and 35 minutes. Each "target" child was observed for a total of five minutes; the order of observation for "target" children was chosen randomly each day. Each child was observed for one minute--five ten-second time samples and a sixth ten-second time sample for shifting observations to a different "target" child. The first behavior occurring in any interval was observed and scored; only one behavior per ten-second interval was scored.

Baseline I

This phase of the study started with the teacher making a routine reassignment of classroom seating positions, placing each "control" next to his respective "target" before any behavior were recorded. This was done to determine if a simple change in seating positions would make any observable difference in the interactions of the peers. It provided a check against the possibility that behaviors would be influenced by seating positions rather than any systematic procedures designed to change behaviors. At this point, the "control" children had no idea of their roles in the forthcoming procedures.

A modified sociometric device entitled "The Class Play" was given to the entire class (see Appendix for copy). The sociometric was designed to allow the entire class to choose students they thought would best fit certain roles, such as: "The Class Clown," and "The One Who Won't Let Other Kids Work When They Want To." This device was employed to determine if the students judged E's selection of "target" children as accurate. E wanted to determine if the children he selected as "targets" would have been chosen by the rest of the students as exhibiting sufficient P behaviors to be recognizable as disruptive influences. Another purpose of the sociometric was to obtain data for comparing these "pre" measures with the "post" sociometric measures to be obtained at the close of the study. This comparison was undertaken to determine changes in sociometric status assigned by the class to the "target" and "control" children.

Also during this phase, a videotape was prepared of the general classroom activity and, specifically, the interactions of the "target" and "control" children. The videotape was prepared both as a training aide and as a useful reference for E and the entire class at the end of the project. The videotape illustrated that "target" children were primary sources of disruptive behaviors, and that social attention or possible reinforcement (maintenance) for these behaviors was coming from "control" children, the rest of the class and the teacher.

Baseline I phase was extended to a period of four weeks to allow for the possibility that any changes in observed behavior not be due to the rearrangement of the classroom seating or the introduction of observers and videotape equipment into the classroom. A reasonably

constant rate of inappropriate and/or disruptive behaviors was obtained during this time period in which any Hawthorne effect would be most likely to be operative.

"Control Training"

This phase began with the children chosen as "controls" being asked to meet with their teacher and "some people for The University of Tennessee who would like your help with a special project." After a brief introduction, the "control" children were asked if they would like to take part in a "secret" experiment designed to help some of their classmates get better grades and not get into trouble. All of the "control" children enthusiastically agreed to assist with the project.

A portion of the videotape obtained during Baseline I was then shown. During the videotape presentation, the children were asked to specifically note those behaviors that make it difficult for other students to listen to the teacher and interfered with classroom learning. The "control" children had little difficulty picking out behaviors classified as disruptive and/or inappropriate. Also, the "control" children were able to identify the "target" children who seemed to be producing these behaviors with remarkable facility.

The "control" children were asked for their opinions as to why some children seem to disrupt the class frequently and do things which make it hard for other people to get work done. The resulting discussion was directed toward the subject of attention-getting devices. More of the videotape was then shown and the "controls" were asked to

raise their hands when they saw someone attending to inappropriate behavior. It was then explained that any responses to inappropriate behavior usually increase chances for repetition of the behaviors, and that failing to respond helps reduce or eliminate the behavior. To augment the discussion of responding to behaviors and ignoring behaviors, the element of giving social attention for desirable behaviors was introduced. E and the "control" children talked about which behaviors were desirable (including attending to the teacher, working on assignments, and volunteering to answer questions with a raised hand) and how they (the "control" children) could best socially attend to these desirable behaviors. Several techniques and devices for social approval of appropriate behaviors were discussed. Each "control" child was asked how he would handle a specific situation that called for either ignoring or attending behavior. This simulation exercise was completed to familiarize "control" children with the application of the concepts involved in the project.

"Control" children were told that they were chosen for inclusion in the project because they got along well with other children, were liked by their classmates, and followed the teacher's instructions.

Each "control" child was then assigned a specific "target" child. During the final segment of the videotape, each "control" child watched his "target" child and indicated what the proper response should be to acts of inappropriate behavior, and to acts of desirable behavior. The importance of not making any responses to inappropriate/disruptive behavior was stressed again at this point. It was also

pointed out, however, that it would be very difficult not to become annoyed or involved in conversation and respond accidentally.

All the "control" children indicated that they would try to ignore behaviors and attend to behaviors when they should. A scoring system was explained, wherein each "control" child was asked to keep a daily record. An act of attention in response to inappropriate or disruptive behavior was scored as a "minus"; similar attention to a desirable behavior was scored as a "plus." "Control" children were told that some "minuses" could not be completely avoided but to really try to get "pluses."

The training session concluded by asking the "control" children to keep the project secret until later, but that they could say they were working with some people from The University of Tennessee if anyone asked them a specific question.

The "Control Training" phase lasted one day.

"Target" Behavior Modification I

During this phase, the "control" children began the process of ignoring inappropriate/disruptive behaviors and attending to desirable behaviors. A brief conference was held with the "control" children at the end of the first day to answer some questions that had not come up during the training session. The conference also served as a vehicle to verbally reinforce the "control" children for their efforts toward ignoring behaviors which they were previously likely to have responded to.

The teacher was asked to meet surreptitiously with the "control"

children near the end of each day. The overt reason for this meeting was to look at each list of "pluses" and "minuses"--the covert reason being to provide social approval for their efforts. Instructions to the teacher were kept purposely minimal so as to interfere with her teaching duties as little as possible. She was asked to glance at each list and make comments like: "You really got a lot of 'pluses' today. That's great." and "Looks like Fred is getting more 'pluses' than you. Try to get a few more." and "John only get two 'minuses' all day. That's good. Keep it up." At no point was she involved in record keeping or other paperwork.

At the end of the first week a meeting was conducted with the control children. Primary topics were their records of "pluses" and "minuses" and possible methods of improving their performance as successful behavior modifiers. A group discussion of hints and ideas proposed by the "control" children ensued. Some of the ideas they proposed for discreetly reinforcing appropriate behaviors were both inventive and directly applicable to the specific classroom situation. One of the "control" children, for example, discovered a method of sharpening his pencil and quietly giving contingent verbal attention. He related that this method allowed him to say something without the verbal complications arising from saying something--namely, the start of a conversation.

During the second and third weeks of "Target" Behavior Modification I, the process was continued. A meeting was held at the end of each week to discuss any problems, and to provide positive reinforcement for the "controls." As in the first conference, the "control" children were verbally reinforced for their roles in the project.

The "Target" Behavior Modification I phase lasted three weeks.

Baseline II

The purpose of the Baseline II was to determine whether the actions of the "control" children did indeed exert a measurable influence on the behavior of the "target" children.

Baseline II was a reversal period in which baseline conditions were reinstated. "Control" children were instructed to respond to behavior as they had before the project began, and, in general, to respond whenever the "target" children approached. "Control" children were further instructed to continue keeping their lists of "pluses" and "minuses" but not to try to get any "pluses." One of the "control" children wanted to know whether it was permissible to start conversations, and to engage actively in inappropriate/disruptive behaviors. E replied that they were not to try to be behavior problems, but that talking infrequently, much as they had done during Baseline I, was acceptable. They were to record these instances of talking as "minuses."

The observers continued to monitor and record behavior. Weekly reliability checks also continued.

The Baseline II phase lasted one week.

"Target" Behavior Modification II

During this phase, the "control" children were asked to resume ignoring of inappropriate/disruptive behaviors, and to resume attending

to appropriate behaviors. Weekly meetings with the "control" children continued.

The "control" children had developed skills of ignoring inappropriate/disruptive behaviors and attending to appropriate behaviors in the Behavior Modification I phase. Since they already had these skills available, the "control" children were interested in discussing techniques for structuring situations where "target" children could become open to reinforcement.

Observations, behavior counts and reliability checks continued during this phase.

The "Target" Behavior Modification II phase lasted two weeks.

Comparison: Teacher/Peer Control

This phase was conducted to compare the differential influence of peers versus the teacher in the reinforcement and maintenance of inappropriate/disruptive "target" behavior. Additionally, this portion of the study could indicate the results that could be expected with both the teacher and "control" peers dispensing social attention for appropriate behavior while they ignored inappropriate/disruptive behavior. This phase had two independent segments.

The purpose of the first segment was to determine if the teacher could influence the behavior of the "target" children as effectively as the "control" children.

To initiate the first segment, the classroom teacher was given a short lesson in the mechanics of behavior modification techniques: to ignore inappropriate/disruptive behavior and to reinforce appropriate behavior with attention or praise.

During the first segment, the teacher began the process of consciously ignoring inappropriate/disruptive behavior, while attending to appropriate behaviors with a smile, a nod or words to the effect of "good!"

At the same time, "control" children were instructed to behave as they had before they knew of the project and during the Baseline II phase. The "control" children no longer were dispensers of appropriate social attention.

The first segment of this phase lasted one week--five school days. There was a reliability check and a meeting with the "control" peers.

In the second segment of this phase, the roles were essentially reversed. The classroom teacher was asked to return to the way she dealt with the students before she was instructed in the basics of behavior modification techniques. "Control" children were instructed to resume attending to appropriate behavior and ignoring inappropriate/disruptive behavior.

The second segment of this phase also lasted one week--five school days. As before, there was a reliability check and a meeting. "Control" children were told they would be in competition with their teacher to see whether the "target" children would respond better to them or the teacher.

The total time period for the Comparison: Teacher/Peer Control phase was two weeks.

"Target" Behavior Modification III

The purpose of this phase was to maintain, and further improve,

the level of appropriate "target" behavior through the techniques of behavior modification.

The "control" children again became primary dispensers of social attention. They returned to the process of consciously ignoring inappropriate/disruptive behavior and attending to appropriate behavior. "Target" children were attended to if they volunteered to answer questions, got good grades on tests, worked at their seats when they were supposed to, handed in homework or seatwork and, in general, engaged in socially appropriate activities. Lists of "pluses" and "minuses" were again kept.

During this final experimental phase, a second videotape was prepared and the sociometric device, "A Class Play" was again administered. The purpose of the videotape was to visually illustrate the changes in overall classroom behavior and specifically, the interactions of "target" and "control" children in contrast to the conditions existing during Baseline I. The purpose of the sociometric device was to determine whether the class changed opinions about the children involved in the experiment.

The "Target" Behavior Modification III phase lasted two weeks, and it was subject to the same observations and reliability checks as the other phases.

Program Disclosure and Final Wrap-Up

With the full accord of the principal and the classroom teacher, permission was granted to pre-empt a portion of a classroom day so that the entire program could be explained to the students. (To prevent

premature disclosure of the steps involved, the "control" children were asked to restrain participation in the discussions until their identities and roles were revealed.)

To begin the day's activities, all of the non-school personnel involved in the study were introduced to the assembled class. During the introductions, however, no information was volunteered concerning the study per se.

Then a question was addressed to the entire class ("control" children excepted): "Do you have any idea why we have been here, and what has been happening the past few months?" The answers were many--some were humorous, some were outlandish, and a few even came close to the truth. The answers confirmed that the "control" children had, as requested, kept their work secret.

The first videotape (from Baseline I) was then shown and the children were asked for their comments on what they saw. After a brief discussion period, the second videotape (from "Target" Behavior Modification III) was shown.

After seeing both videotapes, most of the class recognized there were far fewer incidences of inappropriate/disruptive classroom behavior in the second case. Questions directed to various "target" children indicated that they could see the difference in their own behavior, and that they were pleased with their improved behavior. Questions directed to other class members not directly involved in the experiment indicated that the "target" children were recognized as having changed behaviors designed to obtain attention.

After suitable opening remarks giving major credit to ". . . those classroom members who truly made all these improvements possible . . . " the "control" children were introduced. The specific actions of the "control" children were then explained in some detail, and demonstrated with some typical classroom examples.

In closing, the entire class was invited to work toward maintaining the improved classroom behavior that had been achieved during the experimental study.

CHAPTER III

RESULTS

Table 1 lists the observers' reliability ratings in percentages for each of the categories over each reliability session. Observers obtained 85 percent (or better) agreement for more than 83 percent (147) of the 180 possible categories. These agreement percentages indicate that the observers were looking independently at the same behaviors and classifying them into the same categories almost 9/10 of the time.

The basis for categorizing behaviors was each observer's dual judgment as to what behavior was exhibited and whether the behavior occurred in an appropriate context in the classroom. In light of this complexity of the rating task, reliability percentages were even more impressive.

Baseline observations illustrate the high frequency of problem behaviors cited by the teacher in her original complaint. The graph in Figure 1 shows that there was some minor variability in the mean number of 10-second units of P behaviors during Baseline. However, the mean number of P behavior units is identical (29) for both the first and the last session of Baseline. Even though "target" and "control" children were sitting together, and observers and E were present, almost no changes took place in the mean number of P behaviors produced.

Table 1. Percent Observer Agreement in Scoring "Target" Subject Behavior and Social Attention*

Sessions	Baseline I					Treatment I					Baseline II			Treatment II				Follow Up	
	1	10	14	18	19	2	6	10	11	12	1	2	6	1	3	6	10	4	8
Target Subjects																			
Action (P)	86	80	90	84	91	88	92	87	90	83	85	81	96	92	90	93	92	81	85
Action (D)	95	100	100	97	95	100	90	90	88	95	100	95	100	90	91	90	100	88	83
Talking (P)	90	97	90	86	90	82	85	80	94	81	89	80	91	84	88	82	93	90	80
Talking (D)	100	95	100	95	100	99	100	92	96	100	92	95	90	97	100	94	100	98	94
Out Seat (P)	85	92	80	83	86	80	81	83	80	82	86	94	88	82	84	90	90	83	81
Out Seat (D)	100	100	97	92	100	97	92	100	95	98	98	100	92	99	100	100	97	92	93
Social Attention																			
Control																			
Peer	92	98	94	90	95	100	90	90	92	91	94	92	91	93	100	92	100	94	95
Other Peer	81	85	82	86	89	91	92	93	96	80	80	85	80	82	91	90	94	80	82
Teacher	97	94	96	94	100	100	98	90	93	96	95	90	93	96	100	97	100	99	100

*Percentages based on agreements and disagreements within 10-second scoring intervals.

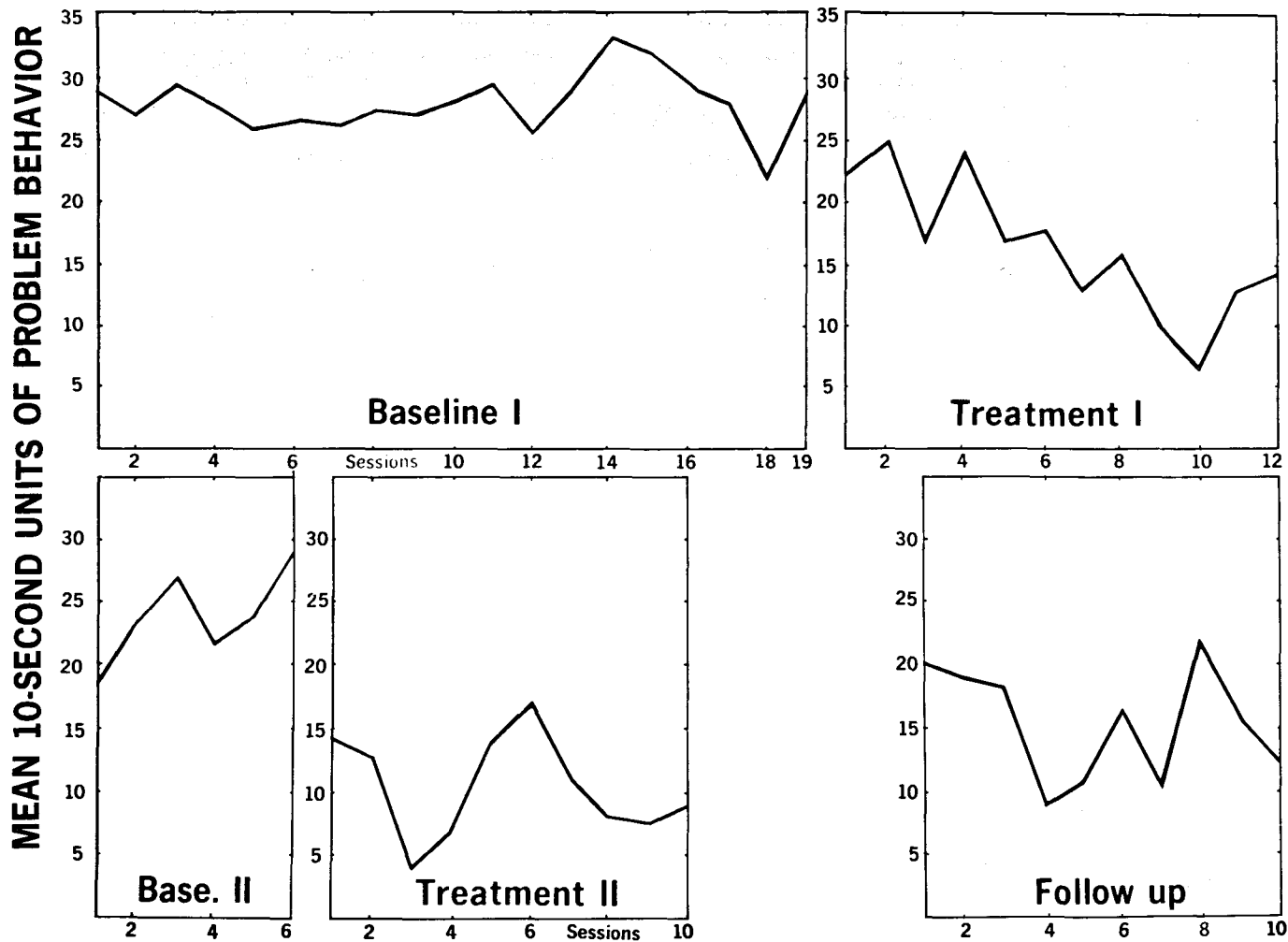


Figure 1. Mean number of problem behavior units produced by target subjects over all baseline treatment periods.

On the first day of Treatment I, the mean number of P behaviors was lower (23) than it had ever been in Baseline. The second day of Treatment showed a slight increase (25) in mean P behaviors, but there was a significant (17) decrease on the third day. The fourth day showed an increase again (25), but the mean units of P behavior dropped steadily (with only minor variabilities) thereafter. The class and the teacher were being presented with approximately one-third as many mean units of P behavior during the last days of Treatment I compared to mean P behavior during Baseline I. "Target" peers produced almost 20 fewer mean units of P behavior during the Treatment I phase.

The graph for Baseline II (Figure 1, p. 30) illustrates how quickly "control" children were able to bring about an increase in mean units for P behavior. The very first day that Baseline conditions were reinstated, P behavior units increased (to 20). By the third day mean units of P behaviors were at Baseline I levels again (27). With fluctuations, they stayed at that level for the rest of Baseline II conditions. The maintenance functions of peer group social attention were therefore clearly demonstrated. These changes emphatically demonstrated that the "control" peers were capable of producing dramatic changes in mean P behavior units by shifting contingencies for social attention.

When Treatment II conditions were implemented, mean P behavior units decreased to half of their last recorded frequency (from 30 to 15). Decrement of mean P behavior continued until a new low (5) was recorded. Mean P behavior increased to slightly more (15) than the approximate mean for all treatment conditions (14), then showed another decrement (10)

which lasted for almost the entire last week of Treatment II. The last days of both Treatment conditions produced similar mean units of P behaviors, indicating that the effects of contingent social attention by "control" peers probably became stabilized in both Treatment conditions. It would appear to be difficult to obtain a continued rate of mean P behaviors less than those presented by "target" peers, given the same conditions.

Data produced by "target" peers during the Follow-up phase indicates that the "control" peers still performed their differential attention functions at a high level even when they were not given teacher and E attention (in the meetings). Mean units of P behavior fluctuated more on a daily basis; but at the end of a two-week period of no significant adult attention or social approval for continued "control" peer efforts, mean units of P behaviors still showed sharp reductions from Baseline P units.

The total classroom effect of contingent social attention was extremely potent. It is therefore reasonable to infer that a clear antecedent-consequent relationship was demonstrated. Mean units of P behavior were clearly responsive to the differential social attention provided by the "control" peers (see Table 2).

The percentage of problem behavior presented by individual "target" children during Baseline conditions ranges from low of 68 percent to a high of 87 percent. These "target" children were accurately selected; any teacher would be burdened by this level of P behavior percentages.

Figure I, page 30, illustrates classroom effects of contingent

Table 2. Percent Problem (P) Behaviors Produced by "Target" Subjects
Over All Baseline and Treatment Periods

"Target" Subjects	Baseline I	Treatment I	Baseline II	Treatment II	Follow Up
1	81	43	70	30	28
2	87	52	75	41	56
3	79	55	71	40	61
4	81	43	69	25	40
5	68	17	46	10	24

social attention via the drop in mean units of P behavior. The effect was just as pronounced on an individual basis also. Each one of the "target" peers showed a drop in P behavior from Baseline conditions to Treatment I conditions. "Target" number 5 decreased P behavior 51 percent, "targets" number 1 and 4 decreased 38 percent, "target" number 2, 35 percent and "target" number 3 decreased 37 percent, for a mean reduction of 37 percent. That figure, however, tends to obscure the significance of P behavior reductions; from 68 percent to 17 percent in one case (number 5), and from 81 percent to 43 percent in two cases (numbers 1 and 4). "Target" child number 5 produced one-fourth as many P behaviors; "target" children 1 and 4 decreased their P behaviors by almost half.

The reinstatement of baseline conditions (Baseline II) found each "target" peer's P behavior percentages returning to a mean of 13 percent less than Baseline I level--almost as much P behavior in Baseline II as they had produced in Baseline I. "Target" children 1, 2, 3, and 4 had a relatively high percentage of P behaviors. Their mean P behavior percentage during Baseline II was about 10 percent less than it was during Baseline I. "Target" peer number 5 had the lowest P behavior percentage. He produced 22 percent less P behaviors in Baseline II than he produced in Baseline I.

Each "target" child showed a significant decrease in P behavior percentage in Treatment II. Further, each "target" child produced less P behavior percentages in Treatment II than he did in Treatment I. Not only were Treatment II operations successful in obtaining marked reductions in P behavior percentages from Baseline II, but also in each

case, the P behavior percentages were less in Treatment II than in Treatment I.

Only "target" number 1 produced P behavior percentages at the same level (even slightly less, in his case) in follow-up as in Treatment II. "Target" children 2, 3, 4, and 5 showed increases of P behavior percentages between the two phases. These increases, however, only elevated to the P behavior percentages to close to the same level as they had been in Treatment I--a marked decrease from Baseline I conditions.

Data in Figure 2 indicate that 100 percent of the observed social attention provided by "control" peers and other peers was contingent on problem behaviors produced by "target" children during Baseline I. This datum in itself is strong evidence of the maintenance of problem behavior by "control" peers, and other peers, and the teacher.

Baseline I conditions indicate that the teacher showed wide variations in her responses to problem behavior, from almost 100 percent attention to almost no attention. The teacher was less likely to respond to D behavior and she did provide at least partial attention to P behavior. The teacher, "control" peers, and other peers provided high levels of social attention in response to "target" P behaviors. Large amounts of social attention were contingent on the P behaviors produced by the "target" peers.

The "control" peers were with moderate success able to shift their social attention away from problem behaviors during Treatment I. In the latter half of Treatment I, they provided only a small percentage of social attention to "target" P behavior.

Decrements in social attention percentages provided by "control"

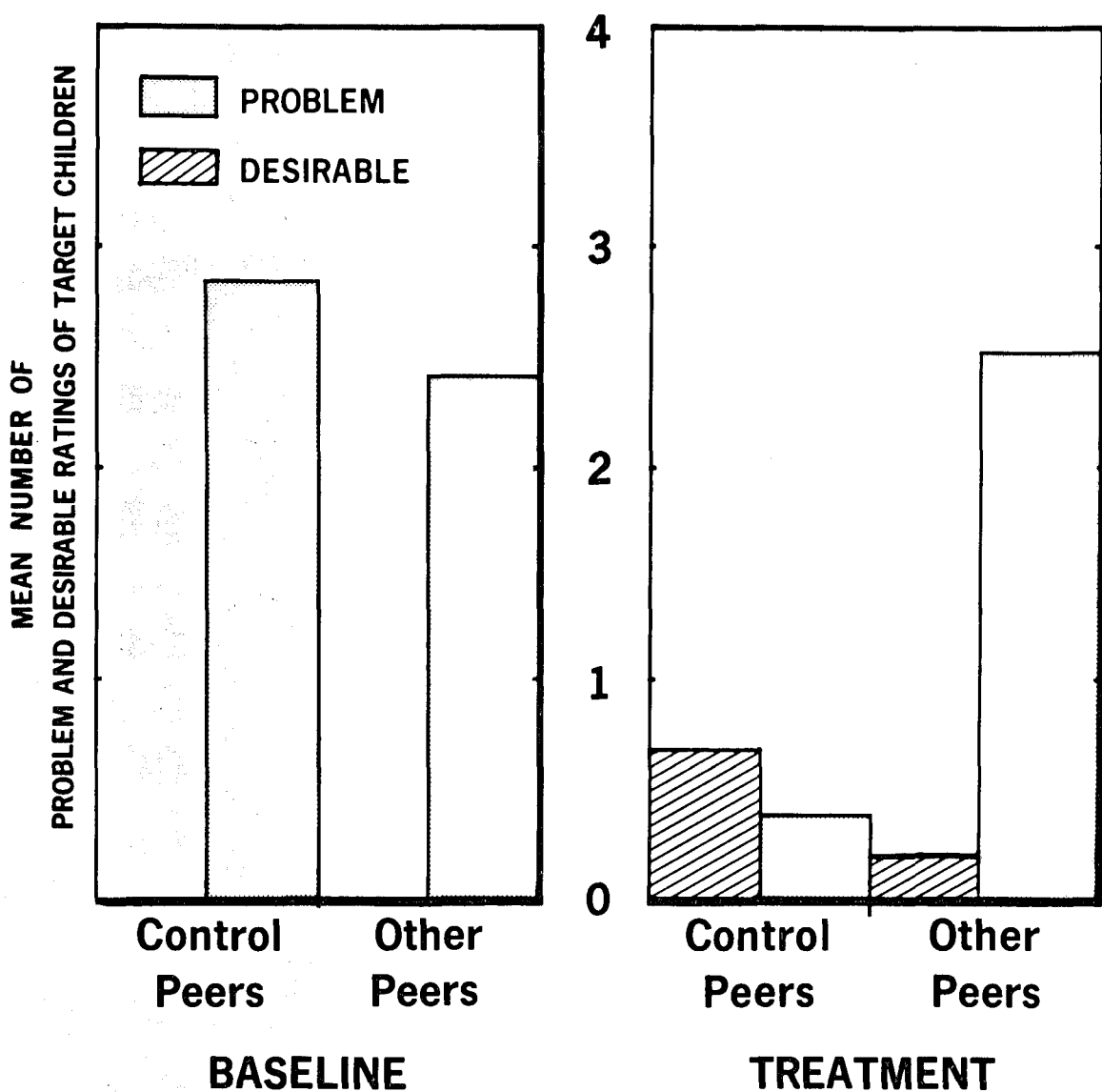


Figure 2. Mean percent of control peer, other peer and teacher social attention units contiguous with target subject problem behavior units.

peers to "target" peers P behavior correlate extremely well with the drop in "target" P behavior percentages shown in Figure 1, page 30. The other peers in the classroom continued their 100 percent social attention to P behavior; they had not been trained to do otherwise. Teacher social attention to P behavior increased, but still showed extreme variability.

Baseline II conditions brought about an immediate return by the "control" peers to 100 percent social attention for "target" P behaviors. There was one minor drop in social attention to P behaviors by the other classroom peers, but it was probably coincidental. The teacher continued her striking variability in social attention responses.

Treatment II conditions found the "control" peers extremely adept at not providing social attention for "target" P behaviors. At only one point did "control" peers furnish any social attention to "target" P behaviors. The Follow-up period did not show the constant lack of attention by "control" peers, but there was only one day of at least 50 percent attention. The other classroom peers maintained high levels of social attention contiguous with P behaviors. The teacher provided no social attention responses to "target" P behavior, for half of the Treatment II phase, and one day in the Follow-up phase. At the end of the Follow-up phase, though, she returned to her previously high level of social attention response to "target" P behavior.

The most important finding shown in Figure 2, page 36 is that "control" peers (before training), other peers, and the teacher provided tremendously high levels of social attention contiguous with "target" P behavior units. This supports the maintenance concepts expressed earlier

in the study. Problem behaviors--at least in this study--seem to be accompanied by social attention almost all the time from all sources. The study indicates, however, that children can be trained, and trained effectively, to provide differential social attention. It appears that specific training is one effective tactic for extinguishing social attention responses to problem behaviors. Without this training, social attention can with a high degree of certainty be expected to follow problem behavior.

Table 3 presents numerically the graphic results of Figure 2, page 36 with the addition of numerical data showing mean social attention units contiguous with desirable (D) behaviors of "target" children.

Other classroom peers provided (with one very minor exception) no social attention units for D behaviors of "target" children. They did furnish constant, if somewhat variable, social attention units for "target" P behaviors.

The teacher's social attention units for both P and D "target" behaviors follow no semblance of order. In three of the five phases, she provided social attention for far more "target" P behaviors than D behaviors. In one phase her mean social attention units were approximately equal for both P and D behaviors; one phase showed more social attention units for D behaviors than for P behaviors.

The key data in Table 3 are the mean units of social attention presented by the "control" peers contiguous with "target" peers' P and D behaviors. During Baseline I, as might be expected, "control" peers were not responsive to "target" D behavior at all. They provided almost as many units of social attention for P behaviors as the other

Table 3. Mean Number of Social Attention Units Contiguous with Problem (P) and Desirable (D) Behaviors of "Target" Subjects

Behavior Category		Baseline I	Treatment I	Baseline II	Treatment II	Follow Up
Control Peers	<u>P</u>	2.54	.82	4.60	.08	.20
	<u>D</u>	.00	.23	.00	.59	.54
Other Peers	<u>P</u>	3.20	3.63	4.47	2.17	2.18
	<u>D</u>	.00	.00	.10	.00	.00
Teacher	<u>P</u>	.65	1.13	.33	.28	.99
	<u>D</u>	.26	.08	.33	.55	.12

peers. In Baseline II, "control" peers increased their social attention units for P behaviors to a level slightly higher than the other peers. The "control" peers responded to "target" P behaviors again.

It seems that "control" peers did not give many compliments (social attention units) to the "target" peers for D behavior. The numerical values of social attention units for D behavior appear relatively small compared with the numerical values of mean social attention units for P behavior.

Perhaps, however, these social attention units for "target" peer D behavior were more important than their numerical values indicate. If a "target" peer never got social attention for production of D behaviors before, even relatively few positive comments could have been extremely reinforcing. The effectiveness of the "control" peers as behavior modifiers was probably due to a combination of extinction phenomena and differential reinforcement.

The graph in Figure 3 indicates that there was only one marked change in the sociometric standings of the "target" peers. The "control" peers did not rate the "target" peers as fitting into the same problem roles after Treatment phases. In the first sociometric, "control" peers rated the "target" peers as fitting into more problem roles than the other classroom peers; in the "post" sociometric, "control" peers rated "target" peers as fitting into problem roles less than they fit into desirable roles.

These changes in ratings of "target" peers by the "control" peers may be an artifact of having worked with and having been delegated

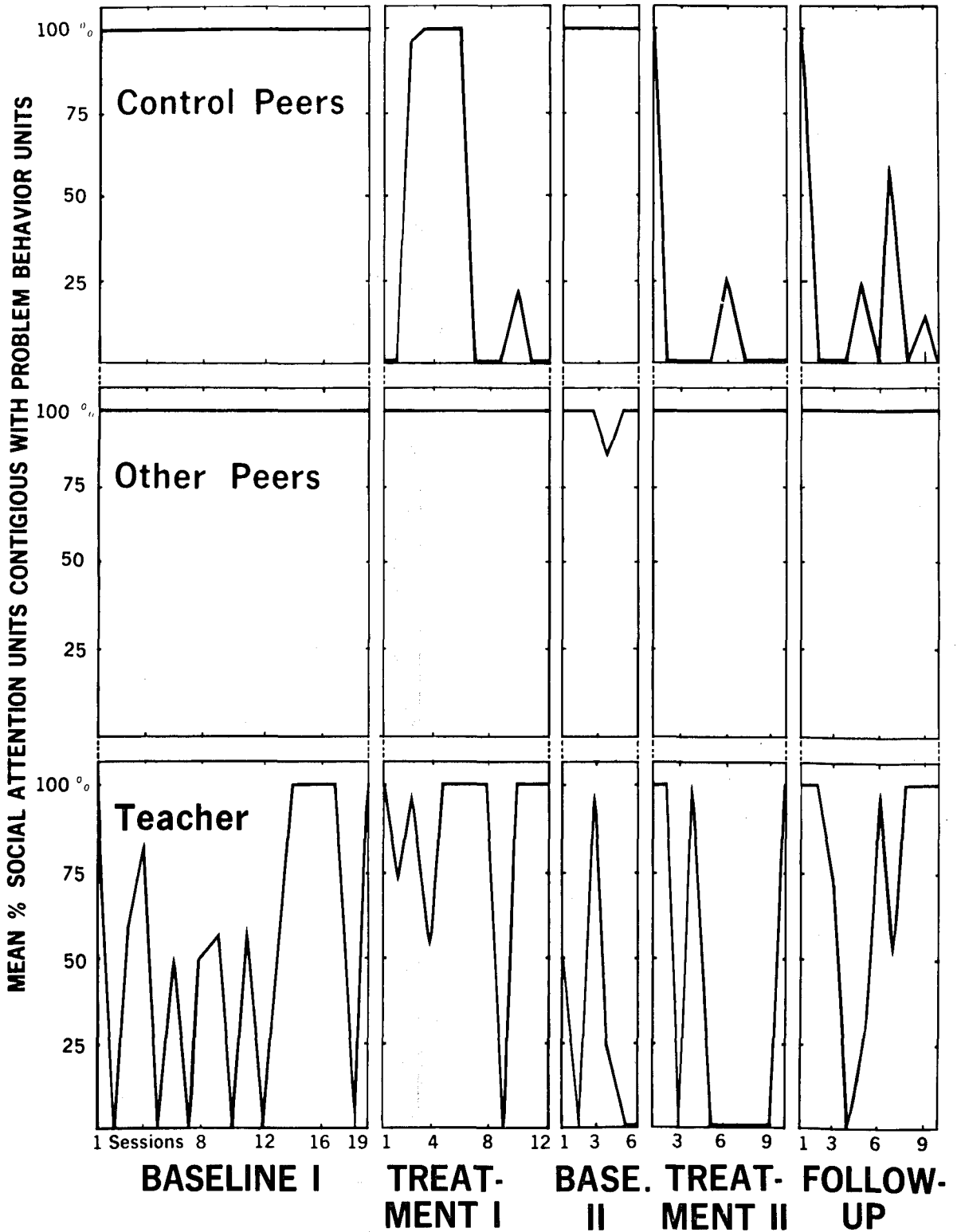


Figure 3. Behavior survey ratings of target subjects by control peers and other peers.

responsibility for them. The changes may also represent more objective decisions based upon changes in behavior the "control" peers ascribed to the "target" peers. Other classroom peers did slightly revise their old descriptions of "target" peers; they were seen as fitting into some (few) desirable roles. Even though there was an impressive decrement in "target" P behaviors in the class, other classroom peers still probably saw the "target" peers as responsible for most of the P behavior going on in the classroom without taking into consideration the markedly fewer incidents of P behavior being produced by the "target" peers. Hence, a reconfirmation of this stability of a child's reputation in the eyes of his peers.

Teacher/Peer Power Comparison

The results of this phase were extremely inconclusive, and showed no discernable patterns. The mean number of P behaviors over the first set of observation sessions (10.2) was virtually identical to that obtained for the second set (10.9). The "control" peers and the teacher had presumably equivalent reinforcement value to the "target" peers, and it is impossible to say who exerted the most influence.

DISCUSSION

Conclusions

The data produced by the "control" peers, "target" peers, other classroom peers, and the teacher strikingly show that: (1) "target" peers received major contingent social attention in support of problem behaviors and (2) this attention can be successfully manipulated in a reliable and effective manner. The data provides strong evidence for the assumption that maintenance of behavior is linked to environmental factors closely related to the behavior.

The significance of this research is threefold: (1) it experimentally confirms the assumption that classroom problem behavior of children operates under direct, short-term environmental consequences, (2) it shows that the maintenance factors in the problem behavior of children can be successfully manipulated by relatively untrained agents, and (3) it indicates that high levels of problem behavior in children are amenable to short-term interventions provided by peers in a naturalistic setting. The research is applicable to the immediate alleviation of disruptive behavior in applied settings; implementation of the methods is practical and requires minimal training and expertise.

Other investigations have demonstrated that peer control of behavior exists in naturalistic settings for both deviant and normal children. However, there has been no experimentally documented

investigation of the maintenance factors provided by the peer group in support of problem behaviors provided by peer group members. This study also empirically documents the success of the peer group using only social attention to systematically manipulate behavior.

Procedural Considerations

"Control" peers were asked not to discuss what they were doing for the duration of the study in order that the effects of their contingent attention could be measured with as few extraneous variables as possible. There was no other reason for this secrecy. The actual efficacy of the process might well be enhanced by open discussions with both "control" peers, "target" peers, and the entire class. Solomon and Wahler (1970), in an unpublished study, found that other classroom peers, who were not told what was being attempted, started to exhibit behaviors in accordance with the social attention contingencies provided by the "control" children. Sometimes three or four peers or even the entire class would compliment a "target" child for socially appropriate behavior. For the research purposes of this study, it was inappropriate for the entire class to "join in." In a different experimental setting, the cumulative effects of contingent social attention provided by "control" peers and the rest of the class if immobilized could further add to the effect and reduce frequencies of problem behavior even more.

In this study, and in two other similar unpublished studies, (Solomon and Wahler, 1970) the "control" children selected were eager and willing to serve as confederates. It seemed to be a "special

honor." At no observed or reported point, in any of the three studies, did any "control" peer receive any negative comments or "static" for being involved with the project. Labels like "goody-goody," "teacher's pet," and so forth, never seemed to be used. In one of the studies (Solomon and Wahler, 1970) (partially to allay E's fears of labels like "manipulation" and "mechanistic") "target" peers were asked how they felt about the project. Responses included "I feel a lot better not getting into trouble," "My grades have come up," and "I like not getting yelled at." In each case, "target" peers reported good feelings about the results of the project.

As was noted in Chapter III, one interesting finding of the study was that "target" peer number 5 produced the least percentage of P behavior, the most percentage drop in P behavior, and the least increment of P behavior during Baseline II conditions. One plausible explanation is that the P behavior pattern was never as reinforcing for him as it was for the other "target" peers. Speculating again, he may have found his newer behavior pattern more reinforcing and became even less amenable to social attention for P behaviors across all treatment phases. Contrastingly, "target" peer number 2 had the highest P behavior percentage, showed the most increment in P behavior during Baseline II, and had the very least overall reduction in P percent across all treatment phases. The converse of the first explanation could be operative. "Target" number 2 found attention for P behavior more reinforcing than attention for D behavior because he never got enough social attention for D behaviors. He overlearned P behaviors to the extent that it became difficult to reach him with

social attention for D behaviors. An examination of the changes in percentages across all treatment conditions for each "target" peer finds one other "target" who fits the second explanation, and two other "target" peers who fit the first. To conclude this speculation, then it is possible to say that three "target" peers extinguished on social attention for P behaviors to a much greater degree than two other "target" peers. Perhaps these three learned to depend more upon social attention for D behaviors.

Even though results of the Teacher-Peer Power phase were very inconclusive, the literature points to contingent teacher attention as being highly reinforcing. For the maximum changes in disruptive problem behavior, working with the teacher (on at least a minimal level) and the peers would likely improve the results.

The child's natural environment is typically composed of parents, teachers, and peers. In order to deal most effectively and successfully with problem behavior, training should be provided for all three of these components. The peer group provides so much maintenance support for deviant behavior that to neglect this component of the environment is to ignore a crucial part of it.

Further Implications

Pragmatically, situations can and do occur wherein children can and do produce deviant behaviors in settings where adult intervention is impossible or unlikely. As an example, school trancies and petty thievery may go without adult detection for some time. Adult modification of these behaviors is unlikely if they are not detected. As the

findings indicate, it is probably reasonable to suggest that peers do support these "difficult to modify" behaviors. Granted that influential peer group members can be reached by adults, perhaps they could be encouraged to use their influence to modify these behaviors. "Peer-therapist" programs may result which are specifically designed to focus peer group influence upon deviant child behaviors typically supported by the peer group.

Other directions for future research ought to include using the concept of peer training in different grade levels, both higher and lower; inclusion of the entire class on the contingencies; providing models for imitative behavior; and making coordinate use of all the significant agents in the child's naturalistic environment.

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APPENDIX

APPENDIX

The Class Play

Let's pretend we are going to have a play here in class. We would like to know which of your classmates you think would best play each part listed. (If there are more than two children who have the same first name, put the last initial.)

1. The Class Clown _____
2. One who always reads a book _____
3. The one who would be the best teacher _____
4. The one who won't let other kids work _____
5. The one who talks the most _____
6. The one who always wants to eat _____
7. The one who stares out the window the most _____
8. The one who is the biggest smart aleck _____
9. The one who gets the best grades in spelling _____
10. The one who fights the most _____
11. The one who is the teacher's pet _____
12. The one who is the best athlete _____
13. The prettiest girl _____
14. The one who helps other kids the most _____
15. The one who dances the best _____